

What is claimed is:

1. A method for securely sharing data with authorized parties, wherein the data to be shared is stored in a database in a first encrypted format, the method comprising:

5 providing a programmable logic device for connection to the database, wherein the programmable logic device is configured to (1) receive a stream of encrypted data from the database, (2) decrypt the received encrypted data stream to create decrypted data, and (3) encrypt the decrypted data in a second encrypted format; and

sharing the data of the second encrypted format by
10 communicating it to an authorized party.

2. The method of claim 1 further comprising:

providing the authorized party with a key to decrypt the shared data.

3. The method of claim 1 wherein the second encrypted format is different than the first encrypted format such that the key provided to the authorized party will be different than a key necessary to decrypt the stored data.

4. The method of claim 1 further comprising providing a memory device in communication with the programmable logic device, wherein the content of the memory device is accessible only by the programmable logic device, and wherein the programmable logic device
5 is further configured to store at least a portion of the decrypted data in the memory device.

5. The method of claim 1 wherein the database is owned by a first party, and wherein the data stored in the database is owned by a second party.

6. The method of claim 2 further comprising:

receiving a request for stored data from the authorized party;
responsive to the received request, retrieving stored data from
the database; and

5 processing the stored data through the programmable logic device.

7. The method of claim 1 further comprising storing data in the database in the first encrypted format.

8. The method of claim 1 wherein the programmable logic device is an FPGA.

9. A device for preparing stored encrypted data for communication to a party, the device comprising:

a programmable logic device in communication with a data storage medium, the data storage medium comprising data stored therein in a first encrypted format, the programmable logic device being configured to (1) decrypt a stream of encrypted data received from the data storage medium to thereby create decrypted data, and (2) encrypt the decrypted data in a second encrypted format.

10. The device of claim 9 wherein the second encrypted format is different than the first encrypted format such that a key provided to the party to decrypt the data of the second encrypted format will be different than a key necessary to decrypt the stored data.

11. The device of claim 9, wherein the device is in communication with a processor, the processor being configured to send a request to the device for stored data, the request to be fulfilled at least in part by the programmable logic device, the device further comprising a memory device in communication with the programmable logic device, wherein the content of the memory device is accessible by the programmable logic device but is not accessible by the processor, and wherein the programmable logic device is further configured to store at least a portion of the decrypted data in the memory device.

12. The device of claim 9 wherein the programmable logic device is also configured to perform a socket operation on incoming and outgoing data to interface the programmable logic device with upstream and downstream components.

13. The device of claim 9 wherein the data storage medium comprises a hard disk drive system, the device further comprising a disk connector for interfacing the device with the hard disk drive system.

14. The device of claim 13 further comprising a disk controller in communication with the disk connector and the programmable logic device.

15. The device of claim 14 further comprising an internal bus connecting the disk controller with the programmable logic device.

16. The device of claim 15 wherein the internal bus is a PCI-X bus.

17. The device of claim 16 further comprising a bus connector for interfacing the programmable logic device with a bus on a computer motherboard.

18. The device of claim 17 wherein the bus connector is a PCI-X bus connector.

19. The device of claim 12 wherein the programmable logic device is an FPGA.

20. A method for securely sharing data, wherein the data to be shared is stored in a database in a first encrypted format, the method comprising:

5 providing a reconfigurable logic device for connection to the database, wherein the programmable logic device is configured to (1) receive a stream of encrypted data from the database, and (2) using reconfigurable hardware logic, translate the received stream from the first encrypted format to a second encrypted format different than the first encrypted format; and

10 delivering the data of the second encrypted format to a requester.

21. The method of claim 20 wherein the requester is an authorized requester, the method further comprising:

providing the authorized requester with a means for decrypting the delivered data.

22. The method of claim 20 wherein the database is owned by a first party, and wherein the data stored in the database is owned by a second party.

23. The method of claim 20 wherein the reconfigurable logic device is an FPGA, the method further comprising:
receiving a request for stored data from the requester;
responsive to the received request, retrieving stored data from
5 the database; and
processing the stored data through the programmable logic device.

24. A device for processing data received from a mass storage medium, the device comprising:
a programmable logic device in communication with the mass storage medium, the mass storage medium comprising compressed data
5 stored therein, the programmable logic device being configured to (1) receive a continuous stream of compressed data from the mass storage medium, (2) decompress the received compressed data stream to create a stream of decompressed data, and (3) perform a search operation within the stream of decompressed data.

25. The device of claim 24 wherein the search operation is configured to determine whether a pattern match exists between a search key that is representative of data desired to be retrieved from the mass storage medium and a data signal that is representative
5 of a decompressed data stream.

26. The device of claim 24 further comprising a memory device in communication with the programmable logic device, wherein the content of the memory device is accessible only by the programmable logic device, and wherein the programmable logic device is further
5 configured to store at least a portion of the decrypted data in the memory device.

27. The device of claim 24 wherein the programmable logic device is also configured to perform a socket operation on incoming and outgoing data to interface the programmable logic device with upstream and downstream components.

28. The device of claim 24 wherein the storage medium comprises a hard disk drive system, the device further comprising a disk connector for interfacing the device with the hard disk drive system.

29. The device of claim 28 further comprising a disk controller in communication with the disk connector and the programmable logic device.

30. The device of claim 29 further comprising an internal bus connecting the disk controller with the programmable logic device.

31. The device of claim 30 wherein the internal bus is a PCI-X bus.

32. The device of claim 31 further comprising a bus connector for interfacing the programmable logic device with a bus on a computer motherboard.

33. The device of claim 32 wherein the bus connector is a PCI-X bus connector.

34. The device of claim 27 wherein the programmable logic device comprises an FPGA.

35. A device for processing data received from a mass storage medium, the device comprising:

5 a reconfigurable logic device in communication with the mass storage medium, the mass storage medium comprising compressed data stored therein, the reconfigurable logic device being configured to perform a plurality of processing operations with reconfigurable hardware logic on a continuous stream of compressed data it receives from the mass storage medium, wherein the plurality of processing operations comprise at least a decompression operation followed by a

10 search operation.

36. The device of claim 35 wherein the reconfigurable logic device is an FPGA, and wherein the search operation is configured to determine whether a pattern match exists between a search key that is representative of data desired to be retrieved from the mass storage 5 medium and a data signal that is representative of a decompressed data stream exiting the decompression operation.

37. The device of claim 35 wherein the reconfigurable logic device is a programmable logic device, the device further comprising a memory device in communication with the programmable logic device, wherein the content of the memory device is accessible by the

15 programmable logic device but is not accessible by a remote processor in communication with the device, and wherein the programmable logic device is further configured to store at least a portion of a decompressed data output from the decompression operation in the memory device.

38. A method searching data stored in a storage medium in a compressed format, the method comprising:

5 providing a programmable logic device for connection to the storage medium, wherein the programmable logic device is configured to (1) receive a stream of compressed data from the storage medium, (2) decompress the received compressed data stream to create decompressed data, and (3) perform a search operation on the decompressed data.

39. The method of claim 38 further comprising receiving a search query from a remote processor, and wherein the programmable logic device is configured to perform the search operation in accordance with the query, and wherein the method further comprises delivering a 5 search result from the search operation to the remote processor.

40. The method of claim 39 wherein the search operation is configured to determine whether a pattern match exists between a search key that is representative of data desired to be retrieved from the mass storage medium and a data signal that is representative 5 of a decompressed data stream.

41. The method of claim 38 further comprising providing a memory device in communication with the programmable logic device, wherein the content of the memory device is accessible only by the programmable logic device, and wherein the programmable logic device 5 is further configured to store at least a portion of the decompressed data in the memory device.

42. A system for processing data received from a mass storage medium, the device comprising:

a storage medium in which at least some data is stored in a compressed format; and

5 a programmable logic device in communication with the storage medium, the programmable logic device being configured to (1) receive a continuous stream of compressed data from the storage medium, (2)

decompress the received compressed data stream to create a stream of decompressed data, and (3) perform a search operation within the
10 stream of decompressed data.

43. The system of claim 42 wherein the search operation is configured to determine whether a pattern match exists between a search key that is representative of data desired to be retrieved from the mass storage medium and a data signal that is representative
5 of a decompressed data stream.

44. The system of claim 42 further comprising a memory device in communication with the programmable logic device, wherein the content of the memory device is accessible only by the programmable logic device, and wherein the programmable logic device is further
5 configured to store at least a portion of the decrypted data in the memory device.